REMARKS

Claims 1-31 are in the case. Claims 1-19 are withdrawn from consideration. Claims 20-31 are under consideration here.

All claims stand rejected under 35 USC § 112, and 102 .

Claims 20, 28, and 30 have been amended to more clearly define Applicants' invention

No new matter has been added.

Claim Rejections – 35 USC § 112

2-3. Claims 28-29 are rejected under 35 USC § 112, 2d paragraph for indefiniteness. It is the examiner's view that the phrase "the functional group" lacks antecedent basis. Claim 28 has been amended to now depend from Claim 25 correcting the lack of antecedent basis.

Claim 28 is unclear as it appear to contradict the distal-portion complexing of Claim 20. Applicants submit the claim is clear as written. Claim 20 provides that the nanoparticle complexes are associated with each other through the distal portion of the ligand. Claim 28 provides that the distal portion may comprise a first member of a binding pair and that the complexes are affixed to a second member of the binding pair. The claim describes the situation illustrated in Figure 1(e) where biotin (first member of a binding pair) is positioned at the distal portion of the ligand and complexs with streptavidin, bringing all the complexes together.

Claim Rejections – 35 USC § 102

4. Claims 20-28 and 30-31 are rejected under 35 USC § 102(e) as anticipated by Mirkin (US 6361944), hereinafter "Mirkin".

The examiner finds that Mirkin discloses the limitations of Claim 20 i.e. a geometric nanostructure comprising at least three complexes comprising a nanoparticle and a ligand (oligos), the ligand comprising a proximal and distal portion where the complexes are attached to each other through the distal portion (hybridization) as illustrated in figure 5. Applicants traverse.

For clarity claim 20 has been amended to recite the limitation that the claimed geometric nanostructure comprises nanoparticle-ligand complexes which are spatially arranged in an ordered geometric pattern. Basis for this amendment is found on page 6, lines 9-11, and in the discussion relating to Generation of Geometric Nano-structures, beginning on page 16, where the formation of spatially arranged di-mer, tri-mer and tetra-mer geometric nanostructures are described. Additionally the claim has been amended to recite the limitation that the nanoparticle comprises a single ligand. Basis for this amendment is found in the examples (see example 3), and in the term "at least one" as recited in the claims as originally filed and in Figure 1 illustrating a single ligand per nanoparticle.

The teaching of Mirkin is silent with respect to spatially arranged nanoparticles or nanoparticle-ligand complexes. Figure 5 (Mirkin) illustrates only a disordered matrix of nanoparticle-ligand complexes, which is confirmed by Figure 9. This fact is underscored by the persistent use of the term "aggregate" when referring to nanoparticles (see column 13, lines 44-48, description of Fig 5; column 14, lines 12-16, description of Fig 9, and through the specification of Mirkin.).

Regarding Claim 30, the examiner suggests Mirkin describes mixtures of di-mers tri-mers and tetra-mers in figure 25. Applicants disagree. Figure 25B illustrates a disordered aggregate of nanopartilcles affixed to a substrate through a singe nucleic acid probe affixed to a substrate. The brief description of the drawings (Col. 15, lines 60-65) describing figure 25 makes no mention of ordered structures such as di-mers and tri-mers, nor does the more detailed discussion of Fig 25 (beginning at Col 22, line 66 and extending into Col 23-24). Notably, the object of Mirkin's aggregates is to amplify signal resulting form the hybridization of target DNA (Co 24, lines 3-31), for which a geometric spatially arranged pattern of nanoparticle would not be needed.

Additionally Mirkin teaches only nanoparticles comprising multiple ligands on each nanoparticle (see column 18, lines 1-5). Mirkin does not teach any method for isolating nanoparticles having a single ligand attached thereto. This is only taught in the present application and forms one of the bases of the invention. The claims as now amended recite the limitation that each nanoparticle comprises a single ligand.

In view of the amendments to the claims and the fact that each and every element of the claimed invention is not found in Mirkin, Applicants submit that the claims are no anticipated by Mirkin and respectfully request withdrawal of this rejection.

6. Claims 20-31 are rejected under 35 USC § 102(b) as being anticipated by Barber-Guillem (US 6261779), hereinafter "Guillem" .

Guillem teaches the formation of nanocrystals comprising oligonucleotide ligands for use in the amplification of a signal in a bioassay. The object of Guillem is that nanoparticles comprising a plurality of oligos will be aggregated into dendrimers in the presence of a target

nucleic acid that has the ability to hybridize to the oligos. The increased mass of the dendrimer enhances the signal for detection of the target nucleic acid.

It is the examiner's view that Guillem describes a geometric nanostructure as described in the abstract, and that all other limitations of the claims are further described. Applicants traverse.

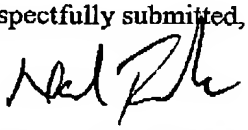
As noted above, an essential feature of the present invention is that a geometric structure is formed comprising nanoparticles that are spatially arranged in an ordered geometric pattern. Guillem teaches dendirmers which are not spatially arranged but are rather a disordered matrix (see the definition of dendrimer, Col 6, line 63). Applicants submit that the abstract of Guillem does not describe a geometric nanostructure as it refers only to the formation of a dendrimer which does not imply nanoparticles that are spatially arranged in an ordered geometric pattern.

Additionally it is an object of the invention of Guillem to provide a plurality of ligands on each nanoparticle (see the abstract; Col 8, line 61 – Col9, line 10). This is in concert with his invention, that being a method to aggregate nanoparticles to enhance the signal associated with the presence of target DNA. As with Mirkin, Guillem does not need, and does not teach a method for isolating nanoparticles associated with a single ligand.

As each and every element of the claimed invention is not found in the cited references Applicants submit that the claims are not anticipated by Guillem and respectfully request withdrawal of this rejection.

Should there be any fee due in connection with the filing of this Response To Restriction Requirement please charge such fee to Deposit Account No. 04-1928 (E. I. du Pont de Nemours and Company).

Respectfully submitted,



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